

7. LOVE OF LEARNING

What does love of learning look like? Consider Linnea, a 10th grader in a blue-collar, primarily white, public school on the outskirts of a large U.S. city. At the school Linnea attends, teachers typically assume that assigned work will not get done for their class because their students have jobs outside of school and little family support for academics.

■ *Linnea signed up to take Latin initially because she liked mythology. During Language Month at her school, she showed up in class dressed as a goddess. Her teacher described her behavior as wonderful, in character, and a bit eccentric. "Linnea likes the idea of doing Latin," her teacher reports. "She speaks Latin with me. Who does that?"*

Interestingly, the other students in Linnea's class took in stride the fact that she showed up dressed as a goddess. In fact, each day when students in the Latin class recount the Latin moments that they have had since the last class meeting—references to a Latin word, the history and/or mythology of Rome and ancient Greece, and so on—Linnea typically recounts about 17 of them, almost always connected to movies she has just watched. Her teacher notes that the other students in the class jokingly roll their eyes as Linnea goes down her list, but because they like and respect her, they listen with good humor.

Linnea is in the second year of Latin. She and a number of others in her class typically stop in to visit her Latin teacher in the morning before school. Unlike most of her peers, however, Linnea also shows up for class having completed all the assignments each day and always has additional contributions like the Latin moments to make. The teacher does not think that Linnea has to work very hard to do these assignments. Her teacher observed, "When we are doing translation of English to Latin, she just pays attention to endings and gets them. This is hard for most of her peers." Asked to describe what she does when

she does run into a difficulty in Latin, Linnea replies, “If there’s a sentence I don’t know how to translate, I’ll look at the other sentences around it and see how they are set up and try to set it up the same way; or, I’ll just keep working until it makes sense. Whenever we learn something new, I like pick it up right away.”

Linnea has positive feelings about learning new things in Latin and confidence that she can keep working until she can make sense of what she is learning. She has made different kinds of connections to the content and has developed strategies for figuring out what she does not immediately know (Renninger & Hidi, 2002; Schoenfeld, 1992). Linnea also feels supported in her efforts to learn, despite a school culture in which doing homework and pursuing the study of Latin are uncommon (A. M. Ryan, Pintrich, & Midgley, 2001). She has a sense of possibility (Markus & Nurius, 1986) and is autonomous in her decision to dress like a goddess, recall Latin moments, and speak Latin with her teacher (Deci, 1992).

About her history class, on the other hand, Linnea commented, “I wish I knew why I have to learn history. . . . When it comes to history my mind becomes a sieve. It will hold the information long enough to pass the test, but then afterward, I’ll only remember the highlights.” Despite Linnea’s sense that she is not really learning history in her history class, her grades are high. In fact, she is considered a strong student in all her classes. Reflecting on the history class, in particular, she comments that she never knows what to expect in that class. She also notes, though, that the history class is like Latin in that “I do well in both classes, and the teachers love me.”

Even though Linnea earns good grades in her history class, she says she is not able to retain what she has learned in that class. The similarities between history and Latin, from her perspective, appear to be the personalities of the teacher and their relationship to her, not the structure or the focus of the class. Thus, even though she feels loved, the open question is whether Linnea is receiving the kind of support she needs to stretch herself so that she can engage the content of history and possibly develop a love of learning for it.

Importantly, Linnea has positive feelings for Latin and knows a great deal about it. She feels confident that she can do the tasks of the Latin class. She generates her own ways of interacting with the subject matter, and she is able to identify and make use of additional resources to pursue her interest for Latin. In contrast, she does not appear to have a way to connect to the history content, even though she feels valued by the teacher. It appears that she has a need to have both positive feelings and an ability to begin working and asking curiosity questions of the content if she is to develop a love of learning for it.

It is an open question whether Linnea has a love of learning as a general strength, or whether she instead has a love of learning Latin or a well-developed interest for Latin. It is also an open question whether she has the potential to develop the more general strength if she learns to regulate her own learning and to generate connections for herself to her other classes, including the history class. ■

■ Consensual Definition

Love of learning is a strength that teachers would like to see in their students, that parents want to encourage in their children, that therapists support in their clients, and that employers try to foster in their employees. In fact, love of learning is a strength to which researchers and the lay public seem able to point with ease, even though it has not been the specific focus of a research literature. Instead, love of learning has been discussed in relation to major conceptual dimensions of a number of constructs, including motivational orientation, competence, value, and well-developed interest.

Love of learning is characterized here as referring both to a general individual difference and to a universal but individually varying predisposition to engage particular content (e.g., Latin, videogames, music) or well-developed individual interest (Renninger, 1990, 2000). Love of learning describes the way in which a person engages new information and skills generally and/or the well-developed individual interest with which he or she engages particular content. When people have love of learning as a strength, they are cognitively engaged. They typically experience positive feelings in the process of acquiring skills, satisfying curiosity, building on existing knowledge, and/or learning something completely new (Krapp & Fink, 1992). This strength has important motivational consequences in that it helps people to persist in the face of setbacks, challenges, and negative feedback—when positive feelings may be temporarily infused with negative feelings associated with frustration until a path or resolution for their problem is identified (Krapp & Fink, 1992; Neumann, 1999; Renninger, 2000). Love of learning describes the process of engaging content that may or may not result in immediate achievement or any immediate benefit to achievement as defined by some external standard like academic tests (Harackiewicz, Barron, & Elliot, 1998). Instead, over time a person may develop a deeper or wider knowledge of contents to be learned and be positioned to make substantial and creative contributions to others' understanding of them.

It is likely that people with love of learning as a general strength would strongly endorse statements such as the following:

- I can't do this task now, but I think I will be able to do it in the future.
- I like to learn new things.
- I will do whatever it takes in order to do a task correctly.
- Learning is a positive experience.
- I care more about doing a thorough job than whether I receive a good grade.

Furthermore, it is likely that people who have a well-developed individual interest, or love of learning, for a particular content area would endorse statements such as these:

- Relative to the other things that I know, I know a lot about (the content area).
- Relative to the other things that I like, I like (the content area).
- I spend as much of my time doing (the content area) as possible.
- Working on (the content area) is hard work, but it never really feels like hard work.
- I know that if I put my mind to it, I can figure out how to do (the content area) really well.

■ Theoretical Traditions and Measures

Love of learning has been included as a partial descriptor of many constructs but rarely discussed as a strength in its own right. For this reason, measures that tap into love of learning tend to be subscales of other measures (e.g., when measuring how much someone says they enjoy thinking about complex things as part of Cacioppo and Petty's, 1982, Need for Cognition Scale). Rather than list all measures that may include some items that reflect love of learning, some examples of measures are identified here in terms of the theoretical traditions in which they have emerged: motivational orientation, competence, value, and well-developed individual interest (Table 7.1).

Motivational Orientation

Several researchers have developed measures of general motivational orientation that distinguish between intrinsic and extrinsic motivation. These measures focus on why someone engages in activities, with items that reflect autotelic reasons (e.g., because they provide challenge, satisfy curiosity, and create interest and enjoyment) used to identify an intrinsic motivational orientation. Many of these items are considered to directly address love of learning because people who endorse them to describe their own learning suggest that they learn for the sake of learning. Items used to identify an extrinsic motivational orientation, in contrast, suggest that learning activities are a means to an end (e.g., to get good grades, to win a promotion, to please someone else).

The presumed relationship between intrinsic and extrinsic motivational orientations differs as a function of theoretical perspective (Ames, 1992; Covington, 1984; Deci & Ryan, 1985a; Harter, 1981; Lepper & Henderlong, 2000; see discussion in Sansone & Harackiewicz, 2000). These differences are reflected in the measures of motivational orientation that have been developed. One of the more widely used measures of motivational orientation is the Work Preference Inventory (WPI; Amabile, Hill, Hennessey, & Tighe, 1994). In the WPI (consisting of 30 items), the intrinsic and extrinsic motivation scales are potentially independent. Individuals can endorse both intrinsic motivation ori-

TABLE 7.1 *Measures of Love of Learning****Motivational orientation****Work Preference Inventory (WPI)*

Amabile, Hill, Hennessey, & Tighe (1994)

Academic Motivation Scale (AMS)

P. Vallerand et al. (1992)

Children's Academic Intrinsic Motivation Inventory (CAMI)

Gottfried (1986)

Competence*Achievement Motivation Scale*

Elliot and Church (1997)

Patterns of Adaptive Learning Survey (PALS)

Midgley et al. (1998)

Orientation Scale

Skaalvik (1997)

Value*Task Value Scale*

Eccles (1984)

Well-developed individual interest

Various content-specific scales, e.g., Green-Demers,

Pelletier, Stewart, & Gushue (1998)

entation items (e.g., "I enjoy tackling problems that are completely new to me") and extrinsic motivation orientation items (e.g., "I am strongly motivated by the recognition I can earn from other people"). The intrinsic motivation scale includes two subscales, enjoyment and challenge, and the extrinsic motivation scale includes two subscales, outward and compensation. The more people endorse intrinsic motivation items on this scale, the more likely they are considered to possess the strength of love of learning (even if they also find extrinsically motivated reasons to engage in learning).

The Academic Motivation Scale (AMS; Vallerand et al., 1992), on the other hand, builds on Deci and Ryan's (1985b) self-determination theory. The AMS scale (consisting of 28 items) is subdivided into seven subscales that assess three types of intrinsic motivation (intrinsic motivation to know, to accomplish things, and to experience stimulation), which are typically collapsed into one index of intrinsic motivation and three types of extrinsic motivation (external, introjected, and identified regulation), which are presumed to vary from less

to more self-determined, respectively. All items represent reasons that one attends college. Following completion of the scale, an overall index is computed to determine the likelihood that a person's college attendance can be attributed to an intrinsically motivated love of learning rather than more extrinsic factors.

The WPI and AMS are used primarily with college-age and older populations. Intrinsic motivation of elementary school and high school age students is typically assessed using Gottfried's (1986) Children's Academic Intrinsic Motivation Inventory (CAMI). CAMI, which is designed to evaluate students' self-reported enjoyment of learning and mastery, includes subscales to assess an overall level of academic intrinsic motivation, as well as intrinsic motivation levels within particular subject areas (e.g., reading, math, social studies, and science). Versions have been developed for both elementary school and high school age students.

Competence

Measures of competence acquisition or maintenance have also included items that reflect love of learning. These measures tend to reflect several kinds of competence-related dimensions, including perceptions of one's capacities and abilities (Bandura, 1986; Marsh, Craven, & Debus, 1991); achievement motivation, or the importance a person attaches to achieving competence in general or specific to a domain (Helmreich & Spence, 1978; Jackson, 1974); the meaning of achieving (or failing to achieve) competence for self-worth (Harter 1998); and the kind of achievement goals a person adopts in a particular learning context (Butler, 1987; Dweck, 1986; Harackiewicz, Barron, Carter, Tauer, & Elliot, 2000; Midgley et al., 1998; Nicholls, 1984). To experience love of learning, researchers studying competence suggest, people must feel (or expect to feel) some sense of competence and efficacy in the learning process; that is, they must feel that they *are* mastering a skill, filling in the gaps in their knowledge, and so on.

The paradox, however, is that learning, by definition, also includes trials in which one fails, feedback that one's hypothesis was wrong, realizations that the current path will not work, and so on (Sansone & Morgan, 1992). To explain this paradox, researchers have distinguished between different kinds of achievement orientations, based on achievement goals people adopt. They hypothesize that these different achievement orientations result in different responses to negative feedback. Some goal orientations are considered to be more conducive to a love of learning than others.

A student with a mastery (or task or learning) orientation, for example, is considered to strive for achievement defined in terms of individual mastery, with his or her progress measured in terms of improvement and effort. In contrast, a student with a performance (or ability or ego) orientation is considered to strive for achievement with progress measured in terms of performance relative to others or some externally defined standard (e.g., grades). Many research-

ers suggest that the pursuit of mastery goals is most likely to be associated with a love of learning, because this orientation allows one to maintain a sense of efficacy while learning (Dweck & Leggett, 1988). Different achievement orientations are also expected to inform the kinds of strategies adopted in pursuit of these goals and the emotions one experiences as a person meets (or fails to meet) them. The kinds of strategies and emotional reactions that help to define and foster a love of learning are also linked to a mastery orientation. For example, students with a mastery orientation are more likely to report using elaboration strategies (e.g., "When reading, I try to connect the things I am reading about with what I already know") and report greater interest in and enjoyment of the topic being studied (Harackiewicz et al., 2000).

According to a number of researchers, the strategic and emotional differences between mastery and performance goals are even greater if a finer distinction is made between approach and avoidance goals (Elliot & Church, 1997; Linnenbrink & Pintrich, 2000; Midgley et al., 1998; Skaalvik, 1997). *Approach goals* are those that lead a person to move toward a positive outcome (i.e., moving toward mastery or demonstrating competence), whereas *avoidance goals* are goals framed in terms of avoiding a negative outcome (i.e., avoiding the failure to master a task or demonstrating incompetence). People with approach mastery goals might be more likely to have love of learning as a strength than would people with avoidance goals. (When learning is examined outside of the classroom, however, performance approach goals may also be conducive to engagement in and enjoyment of learning, particularly for individuals higher in achievement motivation; see Barron & Harackiewicz, 2000.)

There are a number of measures of a mastery orientation (and, more recently, approach mastery orientations). The scale reported by Elliot and Church (1997) has three subscales: mastery orientation (6 items), approach performance goals (6 items), and avoidance performance goals (6 items) (a recent revision of the scale also includes a mastery avoidance subscale; see Elliot & Sheldon, 1998). Individuals who highly endorse the mastery orientation items (e.g., "I prefer course material that really challenges me so I can learn new things") might be expected to be those with a greater love of learning. Similarly, as part of the Patterns of Adaptive Learning Survey (PALS), Midgley and colleagues (1998) assess three kinds of orientations: task orientation (5 items), performance approach goal (5 items), and performance avoidance goal (6 items). Individuals who highly endorse the task orientation items (e.g., "An important reason I do my academic work is because I like learning new things") might be expected to show greater love of learning. Finally, Skaalvik (1997) proposes four subscales: task orientation (6 items), self-enhancing ego orientation (5 items), self-defeating ego orientation (7 items), and avoidance orientation (4 items). Students who score highly on the task orientation subscale (e.g., "What I learn in my university classes makes me want to learn more") might be expected to reflect greater love of learning (see M. Smith, Duda, Allen, & Hall, 2002, and Jagacinski &

Duda, 2001, for a comparison of the psychometric properties of these and other achievement goal scales, e.g., Nicholls's, 1984, Success in School scale).

Value

In addition to the value attached to achieving competence, people who exhibit a love of learning might also be expected to place greater value on the content of what they learn (or expect to learn). For example, the Task Value Scale developed by Eccles and her colleagues (1984; see Eccles & Jacobs, 2000; Wigfield & Eccles, 2000, 2002) measures four dimensions (tapped by 2 items each) that contribute to the overall level of task value. The four subscales include utility (e.g., "In general, how useful is what you learn in [class topic]?"); importance (e.g., "Is the amount of effort it will take to do well in [class topic] this year worthwhile to you?"); interest (e.g., "How much do you like doing [class topic]?"); and perceived cost (e.g., "How much does the time you spend [working on class topic] keep you from doing other things you would like to do?").

Findings from work with the Task Value Scale suggest that values can predict intentions and decisions about activity more strongly than expectancies for success (Wigfield & Eccles, 2002). Thus, people with a greater love of learning could be expected to report greater value for a learning task. In this sense, value might also be expected to contribute to a person's motivation to persist in learning, even when this persistence comes at a cost to the other activities to which the person might be attracted. Wigfield and Eccles (2002) also noted, however, that there may be developmental differences that need to be explored. As they point out, children tend to be optimistic about their competence and performance. Thus, children's abilities to successfully self-regulate and make informed decisions about their own activity might require a match between children's values and their performance. For children, it may be that value can be said to support motivation for task engagement but is not necessarily sufficient for predicting the quality of this engagement.

Well-Developed Individual Interest

Well-developed individual interest is characterized by a person's ongoing and ever deepening cognitive and affective relation with particular content; as such it mirrors the more general strength, love of learning. As the most developed phase of interest development, well-developed individual interest is reliably associated with full engagement for particular content(s) (e.g., Renninger & Wozniak, 1985). A person working with a content of well-developed individual interest is typically able to persevere in his or her efforts despite the types of frustration that challenging work with content can represent (Krapp & Fink, 1992; Prenzel, 1992; Renninger & Hidi, 2002; Renninger & Leckrone, 1991).

Measures of well-developed individual interest assess individual engagement with particular content(s) or the content focus of knowledgeable groups of individuals, such as figure skaters in training, where knowledge and value for the activity can be assumed (Green-Demers, Pelletier, Stewart, & Gushue, 1998). Among young children, well-developed individual interest has been identified using naturalistic observation over extended periods, where knowledge and value are operationalized in terms of repeated, independent, sustained, and complex behavior across different content (Renninger, 1989, 1990; Renninger & Hidi, 2002; Renninger & Leckrone, 1991; Renninger & Wozniak, 1985). Similarly, among older elementary and high school age students, individual interest has been assessed using self-reported levels of stored knowledge and positive feelings for particular content relative to the other content with which the student is involved and, in some cases, independent assessment of student activity as confirmation of self-report (Ainley, Hidi, & Berndorff, 2002; Benton, Corkill, Sharp, Downey, & Khramsova, 1995; Gräber, 1998; Haussler, 1987; Haussler & Hoffmann, 1998; Renninger, Ewen, & Lasher, 2002).

Assessment of older student and adult interest has tended to focus more specifically on identification of the quality of affective engagement at least in part because it is presumed that participants have some knowledge of the content with which they work (Alexander & Murphy, 1998; Koeller, Baumert, & Schnabel, 2001; Krapp & Lewalter, 2001; P. K. Murphy & Alexander, 1998).

■ Correlates and Consequences

Despite the fact that love of learning has not been studied as a strength in its own right, data nonetheless suggest that love of learning supports positive experiences (Csikszentmihalyi, 1978), which, in turn, may predispose psychological and physical well-being. Certainly, people who experience a love of learning appear more likely than others to appreciate what they learn (Covington, 1999). Compared with others who do not have love of learning as a strength, they are more likely to do the following:

- have positive feelings about learning new things
- have the ability to self-regulate efforts to persevere, despite challenge and frustration
- find connections to the content to be learned, generate strategies for approaching this content, and then take the time to rethink their understanding and strategy selection
- feel autonomous
- feel challenged
- have a sense of possibility
- be resourceful (e.g., find models for themselves)

- be self-efficacious
- feel supported by others in their efforts to learn

Taken together, these correlates may predict positive mental and physical health patterns. Some researchers have suggested that greater engagement in education early in life can protect against cognitive impairment in later life (Katzman, 1973), although this point is still debated (e.g., Gilleard, 1997). The ability to sustain interest and develop new interests has been associated with engagement in learning and healthy, productive aging (Krapp & Lewalter, 2001; Renninger & Shumar, 2002; Snowdon, 2001). In addition, the fields of business and technology have increasingly emphasized the need to reconceptualize education as one of lifelong learning, as job demands and requirements continue to change rapidly. Individuals in the workforce with greater love of learning might be expected to be more likely to seek out and meet these challenges (McCombs, 1991).

More generally, the degree to which individuals experience interest and enjoyment as they learn should translate into decreased stress (Sansone, Wiebe, & Morgan, 1999), which over the long term should result in greater physical and emotional well-being (Elliot & McGregor, 2001; Helson & Srivastava, 2001). Similar to what has been identified with other positive subjective experiences (Seligman & Csikszentmihalyi, 2000), therefore, a positive relation between love of learning and happiness, well-being, and physical health might be expected.

■ Development

Love of learning describes a process of engaging with new information and skills that is generally positive and that can withstand the frustrations of challenge and negative feedback. On one hand, this strength distinguishes between individuals in terms of their motivational orientations and goals for learning. On the other hand, it appears that almost all individuals may have some of this strength, in the sense that they can be identified as having well-developed individual interest for at least a few contents. In fact, Travers (1978) suggested that if some interest cannot be identified for a person, this itself is a sign of pathology.

Based on findings from studies of well-developed interest (Krapp & Fink, 1992; Renninger et al., 2002; Renninger & Hidi, 2002), related findings from studies of talent (Csikszentmihalyi, Rathunde, & Whalen, 1993), and discussions of passion (Fried, 1996, 2001), it appears that this strength needs to be nurtured if it is to be sustained over time. Well-developed individual interest cannot develop without challenges (Renninger, 2000). As Fried (2001) notes, the learning environment needs to be appreciated as a web of relations: the learner and the materials; the teacher (parent, therapist, employer) to the materials; the learner to the teacher; the teacher to the learner's academic work (chore, problem, or job); the learner to peers regarding academic work; and the relation

among the learner, parents, and teacher regarding academic work. In order for love of learning to be sustained, the individual needs to learn in a context in which each of these relations supports engagement and collaboration.

Interestingly, there appear to be developmental differences in the amount of support students may ideally need and the likelihood that they will struggle to understand and ask their own questions of the content with which they work. Young children usually immerse themselves in the process of engaging the world around them (Piaget, 1966). They also typically do not have many constraints placed upon them about what normative behavior necessitates. Over time, interested engagement appears to either be sustained or abate in relation to the support received from the environment (including others such as parents, teachers, peers, as well as challenges provided by texts, tasks, and schools).

Some research suggests that interest declines with age, especially for academic content as students enter middle and high school (P. L. Gardner, 1985; Krapp, 2000; Sansone & Morgan, 1992; Wigfield, Eccles, MacIver, Reuman, & Midgley, 1991). However, it also appears that the constraints of the school setting (e.g., limited course options, grades, pedagogical practices) may limit opportunities for interest development (Foellings-Albers & Hartinger, 1998; L. Hoffmann, 2002; Renninger & Hidi, 2002). Moreover, studies on which discussions of interest development are often based have tended to focus on student interest for a discrete set of academic subjects rather than accounting more broadly for the range of possible contents for which students at these ages might have a love of learning or well-developed interest (e.g., videogames, professional soccer). Usefully, the study of the impact of individual interest on adult development does suggest that regardless of what the specific content of interest is, the presence of and the ability to sustain interest benefit the person and his or her place of employment and/or family relations (Krapp & Lewalter, 2001; Renninger & Shumar, 2002; Snowdon, 2001).

■ Enabling and Inhibiting Factors

Even if people do not experience love of learning as a general strength, most people do experience a love of learning for content areas of well-developed individual interest (Travers, 1978). A person does not need to be an expert to have a well-developed individual interest for a content area. Rather, a well-developed interest emerges in relation to a person's developing knowledge (and opportunities to develop this knowledge with which the person can connect) *and* the stored value that accrues from the feelings of competence and sense of possibility that a development of knowledge represents (Renninger, 2000).

Conditions for supporting the development of individual interest, and presumably a love of learning more generally, may need to be set up as direct interventions. A number of situational factors have been identified that sup-

port learning to learn (Hidi, 1990; Schraw & Lehman, 2001). These include strategies that teachers (parents, therapists, or employers) can use to adjust instruction; tasks that are designed to meet the strengths, interests, and needs of students (children, patients, or employees); and methods people can use to self-regulate their own learning (Sansone et al., 1992).

Antecedents and conditions that influence a person's abilities to find connections to content to be learned, generate and revise strategies, feel support, and self-regulate activity to engage particular content areas include the following:

- positive feelings for the particular content area
- knowledge about the content area relative to the other involvements they have
- belief that a task is doable
- curiosity about a task that manifests itself in the asking of curiosity questions
- the ability to identify and make use of resources in order to work on a task

■ Gender, Cross-National, and Cross-Cultural Aspects

References to love of learning are often invoked in conjunction with discussions of the motivation to effectively master and manipulate the environment (Berlyne, 1949; Dewey, 1913; White, 1959). For this reason, the potential to develop a love of learning has often been discussed as universal. Recent research suggests that even if the seeds for love of learning are universal, the form it takes and the conditions that foster it may differ as a function of the cross-nation or within-nation culture in which the person lives (Banks, McQuater, & Hubbard 1977; Jacobs, Finken, Griffin, & Wright, 1998). For example, Iyengar and colleagues (e.g., M. Hernandez & Iyengar, 2001; Iyengar & Lepper, 1999; see related discussion in Greenfield, 1994) have suggested that engagement in and enjoyment of learning may be supported by fostering individual agency in cultures that emphasize independence (e.g., many Western cultures), and by fostering community agency in cultures that emphasize interdependence (e.g., many Asian cultures). Similarly, Li (2002) suggested that the love of learning concept within the Chinese culture “stresses seeking knowledge and cultivating a passion for lifelong learning, fostering diligence, enduring hardship, persistence, concentration, ‘studying hard’ regardless of obstacles, and feeling ‘shame-guilt’ for lack of desire to learn” (p. 248). Thus, instead of individuals feeling shame or guilt as the result of failing to achieve, as is hypothesized within Western cultures, the Chinese model suggests that shame or guilt results from failing to *want to learn*.

Similarly, there is no reason to expect gender differences in the predisposition to experience love of learning or well-developed individual interest, al-

though there may be differences as a function of the contexts or domains in which love of learning surfaces, the form it takes, and the kinds of within-domain contextual and interpersonal factors that support it. For example, there tend to be no gender differences in the degree of achievement motivation reported by males and females, although females tend to score slightly lower on the competition subscale of the Work and Family Orientation scale (Spence & Helmreich, 1983), and males tend to score slightly higher on the “goof off” or work avoidance subscale of the Success in School Scale (Nicholls, 1984). In addition, males and females may have different initial levels of interest for particular topics as a function of sex-typed experiences (Hoffmann, 2002; Renninger, 1992). Males and females may also have different expectations for success in different domains, which can influence the degree of interest and value of that domain (Eccles, 1984, 1994; Wigfield & Eccles, 2000). Finally, women tend to experience a greater interpersonal focus in achievement domains (e.g., Strough, Berg, & Sansone, 1996), and this focus can translate into different goals while students engage in learning, the use of varying strategies to regulate interest and motivation, and diverging sensitivity to feedback (e.g., J. L. Smith, Morgan, & Sansone, 2001). Differences of domain and interpersonal focus may also lead males and females to develop different contents of interest because they influence the process of making connections to past experiences and valued aspects of the self, as well as the degree of support for using relevant strategies (Renninger, 2000; Renninger & Hidi, 2002).

Findings such as these suggest that there may be other important moderating factors of the development and maintenance of love of learning that differ as a function of the cultural and social background of the person that have yet to be identified.

■ Deliberate Interventions

Cultivation of the general strength (love of learning) or its more content-specific form (well-developed interest) may need to be recognized as a process that requires a person to first overcome existing feelings, prior experiences, misconceptions, stereotypes, and so forth. As Dewey (1913) observed, any deliberate intervention needs to focus on providing conditions that allow a person to develop his or her understanding; this, in turn, will result in valuing and sustained efforts to really understand content.

The case of Linnea and her Latin classmates is an example of a teacher's deliberate intervention to establish conditions that will support students' abilities to learn, and perhaps eventually develop the strength of love of learning. Although only 2 other students beside Linnea were identified as having a well-developed interest for Latin, the other 38 students could all be said to have a maintained situational interest for Latin—these numbers are notable for this

population of students, although this level of engagement would be remarkable in any classroom, in any school. A maintained situational interest is an earlier phase in the development of interested engagement that can, with support over time, emerge as an individual interest (Hidi & Renninger, 2003).

That these students, in this population, are willing to assume the challenge of learning Latin and complete most of the assigned work may be attributed to the fact that the class is hard and that the teacher has structured it so that they can learn (see related discussion in J. C. Turner et al., 2002). The Latin class is active, and the curriculum builds on the students' everyday experience. In particular, the teacher's use of Latin moments, current events, and project work enables the students to make meaningful and authentic connections to the Latin they are learning (Bransford, Brown, & Cocking, 1999)

Furthermore, the students know that the teacher likes them, and she communicates her understanding of their efforts to organize themselves to learn (Noddings, 1992; A. M. Ryan et al., 2001). The teacher also has a clear plan for the class that builds on what the students know, focuses on the students as learners, and conveys an expectation that they can and will learn (Barth 2001; Palmer, 1998). Interestingly, the content of what the students are asked to learn is not in itself engaging material for adolescents—Latin phrases, verbs, and a book about a senator who is called back to Rome. Rather, it appears to be the connection that the students have developed to the teacher, and the way in which she has structured their learning in the class over time, that support the students' situational interest for and information about ways to engage and make sense of Latin.

As the experience of Linnea and her peers suggests, the teacher (parent, therapist, employer) plays a pivotal role in whether interventions to support learning generally and a love of learning more specifically are to be successful. A teacher is in a position to adjust instruction through the particular methods that are employed, which is what this Latin teacher does for her students. The teacher can also work to adjust the content of what is taught, which this teacher does to a more limited extent. Finally, the teacher can work to support the students' abilities to self-regulate their learning, which this teacher does not do in any developed way, although she notes that this is something she has as a goal. Interestingly, the emphasis placed on the teacher as needed facilitator is echoed by Csiksentmihalyi, Rathunde, and Whalen's (1993) assertions that without family support it is unlikely that a child's talent will be developed. In fact, they comment that it is a myth that a child's talent will either surface or survive without support from others.

The person who does not have love of learning as a strength, or a well-developed individual interest for content to be learned, needs support to find ways to connect to learning. Moreover, even if people love learning, they need support to sustain the frustration that is inherent in challenging assumptions, the

identification and learning of new skills, and so forth (Csiksentmihayli, Rathunde, & Whalen, 1993; Fried, 2001; Renninger, 2000; Renninger & Hidi, 2002; Steele, 1997). Steele's (1997) wise schooling intervention, for example, is aimed at creating and helping minority college freshmen maintain a love of learning so that they will be less likely to drop out of college. Building on the work of Treisman (1992), the intervention includes several methods that may be applied to smaller groups of students (minority and nonminority). First, the intervention provides students with knowledge and challenge by framing the intervention itself as a select opportunity offered to students with a high learning potential. Framing the experience in this way curtails any feelings of being singled out for remedial or lower level learning expectations. In addition, students meet for challenging content-based workshops (e.g., math, writing) that teach skills and learning strategies at a high, fast-paced level. Second, the intervention serves to foster a social network and help students fulfill interpersonal needs through offering a focus for connecting to each other through content that is of interest. This is accomplished by having students live near each other in the same wing of a dormitory for the first semester, as well as having students meet weekly in small discussion groups to talk about an informal (personally relevant) reading assignment. Although highly intensive and expensive, this program has shown promising results.

Another type of intervention is derived from laboratory and classroom studies of environments that facilitate mastery-approach orientations to learning and task performance (Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997; Roney, Higgins, & Shah, 1995; Turner et al., 2002). A mastery-approach intervention emphasizes self-improvement, understanding, and the value of learning for its own sake. Turner et al. (2002) describe mastery-approach classroom environments as characterized by teachers who transfer responsibility to the students for learning, promote question asking, and encourage students to seek help for further understanding. In mastery-approach classrooms, student answers to questions are typically negotiated with the teacher and other students, and errors are viewed as constructive. Importantly, the organization of these classrooms is also intended to facilitate collaborations between students to meet their social goals and foster joint responsibility for learning. This is important because individuals can have interpersonal goals that they see as part of the achievement activity. For these individuals, greater interest is fostered when the activity is structured to allow both achievement and interpersonal goals to be met (Isaac, Sansone, & Smith, 1999; J. L. Smith et al., 2001).

Interestingly, one complication of mastery-approach classrooms is that short-term measures of student achievement may at first suggest lack of achievement because students are focused on learning and understanding rather than demonstrating the ability to perform. The mastery-approach intervention is most effective if implemented by a teacher, or a familiar other, who can relate

to the learner in terms of more than his or her academic abilities (A. M. Ryan et al., 2001). It provides support for learning both through the familiar other and in terms of the students' knowledge of the task or classroom. It is also important that the student perceives the structure of the classroom or the task as having a mastery approach. This can be accomplished by emphasizing goals. In fact, Harackiewicz and Elliot (1993) reported that low achievement-oriented students are likely to spend more of their free time with and enjoy tasks more when they are told that they will be evaluated based on how skills develop and improve, whereas the same students are less likely to spend free time with and enjoy tasks when performance and skill demonstration is emphasized as an outcome (see related findings in Assor, Kapland, & Roth, 2002).

Interventions such as these address individual needs for experiencing belongingness, competence, positive feelings, and utility (Bergin, 1999). They have multiple components and provide a number of ways for students to anchor what they do know in the task or materials to be learned (Cognition and Technology Group at Vanderbilt, 1990, 1991).

In addition to providing opportunities for students to think together and revise their initial understanding of tasks, students also need to be involved in tasks that are (a) complex enough to require collaboration and encourage sharing of differing perspectives, and (b) authentic and meaningful (S. R. Goldman et al., 1998). Linnea's ability to know that she was learning in her Latin class, but not in her history class, appears to be linked to the way in which she was able to anchor her learning in the two classrooms. Whereas the content of each class is largely factual, the structure of the Latin class includes participation that is meaningful and focused (Wade, 2001). Participation in this class includes sharing what is understood and revising this understanding based on new information. In the history class, on the other hand, as one of Linnea's peers commented, "We screw around for 3 days, take 20 minutes of notes, and then take a test." In fact, the history teacher prioritizes getting to know the students over history content, and like the Latin teacher includes project work and discussions as methods. Thus, successful intervention does not appear to be simply a function of a caring teacher and/or the use of interactive tasks but requires that students have an understanding of the goals for their work in the class.

The overall organization of the history class is much less structured than the Latin class, and from the students' perspectives feels sort of "hit-or-miss." Linnea, like her peers, does not appear to have a clear sense of what she is expected to learn in history, or why. As a result, it is not surprising that Linnea feels there is more that she might be learning from the history class. The complication for her seems to be that the class does not have an analogue to "history moments" or opportunities to make connections between her everyday experience and the history she is learning.

The Latin moments exercise taken by itself is emblematic of interventions that involve adjusting the features of texts and tasks to capture students' attention (see reviews by Hidi, 2001; Hidi & Berndorff, 1998). Lepper and Cordova (1992), for example, designed external intervention programs to increase children's interest in topics such as graphing and computer programming. Their approach includes embellishing components of the task (e.g., graphing a point in space) with personally engaging factors (e.g., calling the point to be graphed "cheese" for a "mouse" to find in the space). Enhancing the motivational appeal of the task was found to significantly increase the children's reported desire to work on similar problems in class (without the embellishments) as well as their learning of the material. Similarly successful studies include interventions that use interest to enhance students' attention to text (McDaniel, Waddill, Finstad, & Bourg, 2000); reading of text (e.g., Hidi & Baird, 1986; Sadoski & Quast, 1990; Schraw, Bruning, & Svoboda, 1995; Wade, Buxton, & Kelly, 1999); and comprehension of text (Schiefele, 1996, 1999; Schiefele & Krapp, 1996).

Garner and colleagues, however, have reported deleterious effects when interesting but unimportant information (termed *seductive details*) is added to text (Garner, Alexander, Gillingham, Kulikowich, & Brown, 1991; Garner, Brown, Sanders, & Menke, 1992; Wade, 1992). Findings from these studies underscore the importance of matching interventions to enhance task interest to the behaviors required to learn the material. In other words, interventions to enhance interest should not interfere with the learning demands (see Lepper & Henderlong, 2000; Sansone & Smith, 2000). It is difficult, however, to always know a priori when an intervention to increase task interest will support learning, especially if the intervention itself is also assumed to be of interest to the student.

An alternative approach is suggested by the research of Sansone and colleagues (Sansone & Morgan, 1992; Sansone & Smith, 2000; Sansone et al., 1992). In addition to a person's interest and engagement in learning being regulated by external interventions (such as by embellishments or teacher support), this research suggests that older students and adults can actively regulate their own interest and enjoyment. In particular, external interventions that enable the individual to see the activity as something to value can result in the person actively engaging in strategies that make the activity more interesting for himself or herself. For individuals working with a task or in a domain they do not find interesting, the presence of (a) a good reason to do the task and (b) options to make the task more interesting can lead the individual to self-regulate his or her experience of interest and subsequently redefine the task so that it becomes more interesting. This type of intervention is particularly effective over time because it involves the student in learning how to assume responsibility for his or her own learning.

When students are in a position to self-regulate interest for learning, this type of intervention has the advantage of being readily available when and

where an individual chooses to use it. Given that interest has been shown to be a powerful influence on sustained attention and comprehension, it appears likely that promoting self-regulation of interest for learning may result in positive motivational and performance outcomes in the long term—especially if the intervention to enhance interest complements the behaviors needed for learning.

■ What Is Not Known?

As discussed here, love of learning refers both to a general strength and individual difference, and to an individually varying but universal predisposition to reengage particular content or well-developed interest. Love of learning has been discussed in relation to the conceptual dimensions of different constructs; however, a number of open questions remain about love of learning and how it develops:

- When and how are real-life connections to materials to be learned made for the person who has a love of learning?
- What effect does the opportunity for different learning task alternatives and strategies have on the experience of love of learning?
- How well do people learn who do not have love of learning as a strength?
- Do people with love of learning as a strength differ from others in the number of well-developed individual interests that they can be identified as having?
- What is the role of other individual difference and contextual factors on love of learning (e.g. global self-esteem, fear of failure, socioeconomic status, and race and gender based on stereotypes)?
- What are the long-term personal and societal benefits and consequences of the love of learning? Do these extend beyond academic outcomes such as health-related issues and family and other interpersonal relationships?
- What types of conditions are needed to enable children to learn to self-regulate their interest for learning?
- Is the ability to self-regulate innate? At what age is a child able to learn to self-regulate his or her interest for learning? How do the skills of self-regulation of motivation change over the life span?
- Is a person more likely to self-regulate his or her engagement with a content of well-developed individual interest than a content of less-developed individual interest? Is it possible to use well-developed individual interest as a scaffold for helping a student to develop the strength love of learning?
- What are the long-term outcomes of self-regulating interest for learning?

■ Must-Read Articles and Books

- Covington, M. V. (1999). Caring about learning: The nature and nurturing of subject matter appreciation. *Educational Psychologist*, 34, 127–136.
- Csikszentmihalyi, M., Rathunde, K., & Whalen, S. (1993). *Talented teenagers: The roots of success and failure*. New York: Cambridge University Press.
- Fried, R. L. (2001). *The passionate learner: How teachers and parents can help children reclaim the joy of discovery*. Boston, MA: Beacon Press.
- Harackiewicz, J. M., Barron, K. E., Carter, S. M., Lehto, A. T., & Elliot, A. J. (1997). Predictors and consequences of achievement goals in the college classroom: Maintaining interest and making the grade. *Journal of Personality and Social Psychology*, 73, 1284–1295.
- Hidi, S., & Berndorff, D. (1998). Situational interest and learning. In L. Hoffmann, A. Krapp, K. A. Renninger, & J. Baumert (Eds.), *Interest and learning: Proceedings of the Seon Conference on Interest and Gender* (pp. 74–90). Kiel, Germany: IPN.
- Hoffmann, L. (2002). Promoting girls' learning and achievement in physics classes for beginners. *Learning and Instruction*, 12, 447–465.
- Krapp, A., & Lewalter, D. (2001). Development of interests and interest-based motivational orientations: A longitudinal study in vocational school and work settings. In S. Volet & S. Järvelä (Eds.), *Motivation in learning contexts: Theoretical and methodological implication* (pp. 201–232). London: Elsevier.
- Renninger, K. A. (2000). Individual interest and its implications for understanding intrinsic motivation. In C. Sansone & J. M. Harackiewicz (Eds.), *Intrinsic and extrinsic motivation: The search for optimal motivation and performance* (pp. 375–407). New York: Academic Press.
- Sansone, C., Weir, C., Harpster, L., & Morgan, C. (1992). Once a boring task always a boring task? Interest as a self-regulatory mechanism. *Journal of Personality and Social Psychology*, 63, 379–390.
- Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist*, 52, 613–629.